

Message

**From:** Laura Jensen [ljensen@rouxinc.com]  
**Sent:** 6/18/2018 9:58:32 PM  
**To:** Cirian, Mike [Cirian.Mike@epa.gov]  
**CC:** Gunnar Emilsson [EmilssonGR@cdmsmith.com]; Sanchez, Brian [sanchez.brian@epa.gov]; Berry, David [Berry.David@epa.gov]; Dick Sloan [rsloan@mt.gov]; 'John.Stroiazso@glencore.ca' [John.Stroiazso@glencore.ca]; Steve Wright - CFAC [swright@cfaluminum.com]; Skipper, Sherry [Skipper.Sherry@epa.gov]; Andrew Baris [abaris@rouxinc.com]; Roux IT [mritorto@rouxinc.com]  
**Subject:** CFAC Production Wells - Request for Concurrence  
**Attachments:** SDS Mobil DTE FM 32 Food Grade Hydraulic Oil.pdf; Swan Hill & Flathead County Drinking Water Inspection.pdf  
**Flag:** Follow up

Mr. Cirian,

As discussed, as part of the Phase II Site Characterization and as described in the Phase II Sampling and Analysis Plan (SAP), Roux personnel gauged water-levels in the five former production wells onsite between June 4 and June 5, 2018. Prior to this June water-level gauging event, the production wells were not measured as part of the ongoing Remedial Investigation/Feasibility Study since historic pumps were still installed in the well, making the well inaccessible for sampling. The pumps were removed from the wells in the late summer of 2017. During the Phase II June 2018 gauging activities, Roux observed light non-aqueous phase liquid (LNAPL) in former production wells CFMW-036 and CFMW-062 (formerly known as production wells W1-PW7 and W1-PW6, respectively), located north of the Flathead River. The LNAPL was observed to be light-brown in color and odorless. Following this observation, Roux gauged all five of the production wells with an oil-water interface probe to confirm the presence, or lack-there-of, of LNAPL, in all production wells. The gauging data for these production wells is listed in the table below.

Production Well ID	Elevation of Top of Casing (ft-amsl)	Well Screen Top (ft-amsl)	Well Screen Bottom (ft-amsl)	Depth to LNAPL (feet below top of casing)	Depth to Water (feet below top of casing)	Depth to Bottom (feet below top of casing)	Thickness of LNAPL (feet)
CFMW-036 (W1-PW7)	3033.84	2968	2960	15.79	16.71	59.9	0.92
CFMW-048 (PW3)	3118.11	2996.96	2986.96	--	83.23	126.25	--
CFMW-051 (W9-PW5)	3034.54	2985.35	2961.18	--	105.28	163.8	--
CFMW-052 (PW4)	3051.32	2985.25	2964.49	--	123.82	180	--
CFMW-062 (PW6)	3033.86	2959.4	2951.4	15.77	17.21	78.3	1.44

Roux contacted Mr. Steve Wright of CFAC to inquire about the LNAPL in production wells CFMW-036 and CFMW-062 and the potential source of the LNAPL. It was determined that the LNAPL is a lubricating oil formerly used in the production well pumps during operation. The production wells historically used vertical turbine pumps (not submersible pumps) to pump groundwater during operation. As noted by Mr. Wright, these vertical turbine pumps used an aboveground motor connected to a rotating shaft in the well with the impeller at the end of the shaft. A disadvantage of this design is the seals around the rotating shaft would often leak, and lubricating oil would enter the top of the well and float on the water column. For this reason, a food grade lubricating oil (Mobil DTE FM 32 Food Machinery Hydraulic Oil) was used to lubricate the shaft such that the water could still be used as a drinking water source. The Safety Data Sheet (SDS) for the food grade lubricating oil is attached.

Montana Department of Environmental Quality (MDEQ) and Flathead City-County Health Department were aware of the food grade lubricating oil used in the production well pumps. Attached is a Health Advisory Follow-up Report completed by South Hills Environmental Management Consultants, LLP (South Hills) on December 11, 1997. Page 3 of the report notes that all pump columns are lubricated with food grade vegetable oil.

In an effort to sample the groundwater in these two production wells, Roux proposes to pump (skim) the lubricating oil on top of the water column with a peristaltic pump and remove the oil. It is not expected that the lubricating oil re-

enters the well because there is not a current source of oil and the current oil-water interface is much higher in elevation than the well screen, and therefore, had no potential to impact the surrounding formation or filter pack. Once the lubricating oil is removed by pumping, the well will be allowed to equilibrate from any incidental groundwater removed during pumping.

In order to reduce the potential for any remaining oil in the well to encounter the groundwater sampling equipment and potentially contaminate the sample, the air-water (formerly oil-water) interface will be bypassed by inserting a 2-foot length of PVC pipe with a plug on its end through the air-water interface. After the PVC has passed through the water and the plugged end is fully submerged in water below the air-water interface, the plug will be removed. The groundwater sampling equipment will then be inserted through the PVC down to the selected sampling interval; never contacting the interface. A groundwater sample will then be collected in accordance with the protocols described in the Phase II SAP.

Please provide concurrence with the above described approach for sampling groundwater from the two former production wells.

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